

HEALTH PROMOTING BEHAVIORS AMONG OLDER PEOPLE LIVING ALONE WITH CHRONIC DISEASE IN THE LOWER NORTHERN REGION OF THAILAND

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Abstract

Background: Old age is the period of life when people suffer from a variety of degenerative conditions.

Objectives: This study investigates a population of over-60s in a rural Thai province to examine the relationships between living alone, health-related behaviours and incidence of chronic illness.

Methods: This study was descriptive study. All of population were purposively selected in this study included 572 of over-60s , who had presented for treatment during January 7 to August 6, 2011 at five community “health promotion” hospitals in Kong Krailat district, in Thailand. The research employed a purpose-designed structured interview. Possible associations between presence of healthy and unhealthy behaviours and reported health status were examined using logistic regression analysis and odds ratios (OR), confidence intervals (CI), and chi-square results were calculated.

Results: Those living alone were somewhat more likely to be socially isolated, have high-fat diets, and engage in low levels of regular physical activity. However after controlling for confounding variables, significant associations were found only between living alone and high alcohol use and problems in managing stressful life events. Older people living alone were more than twice as likely to use alcohol to hazardous levels as those living with a caregiver and more than twice as likely to report difficulty in managing stressful life events. The likelihood of depression as diagnosed by a hospital physician or nurse was 4.82 times higher in those living alone (OR =3.96, 95% confidence interval [CI] = 1.1 to 13.4).

Conclusion: Given the results of this study, we suggest that increased attention must be focused on the interaction between alcohol use, coping with stress and depressive illness.

Keywords: Health promoting behaviors, older people, chronic disease, living alone

Introduction

Population aging is expected to be among the most prominent global demographic trends of the 21st century. The level and pace of population aging vary widely by geographic region¹. In Thailand, as in most other countries, the proportion of older people is increasing steadily². Consequently, the number of elders living alone has also increased³.

Old age is a period of life when people may face degenerative problems with physical, mental and social dimensions. Older people are vulnerable to a range of communicable and non-communicable diseases, such as dementia, diabetes, osteoporosis and cataract, all of which may lead to disability⁴. It has been found that more than 40% of older people have at least one underlying disease and 75% suffer from chronic disease⁵. Much of this illness results from unhealthy behaviors such as insufficient physical exercise, poor diet, and tobacco and alcohol use, which may all contribute to increased morbidity and mortality⁶.

Older people living alone may be especially vulnerable: they have been described as an 'at risk' group by the World Health Organisation⁷. Living alone may exacerbate physical and mental health problems⁸, particularly since the support of an extended family, valued in Asian cultures, is absent⁹. Lone elders with more than two chronic health problems may be at higher risk of not receiving proper health screening¹⁰. In later life chronic disease means, at

¹ Gavrilov L.A., Heuveline P. "Aging of Population." In: Paul Demeny and Geoffrey McNicoll (Eds.) *The Encyclopedia of Population*. New York, Macmillan Reference; 2003.

² Foundation of Thai Gerontology Research and Development. *Situation of the Elderly in Thailand 2007*, Bangkok: TQP Co.,Ltd; 2008.

³ Ryuichi K., Osamu Y., Yuichiro O. and Akihiro K. Influence of living alone on emotional well-being in community-dwelling elderly persons. *Geriatrics and Gerontology International*. 2005; 5: 152–158.

⁴ World Health Organization. *Integrating poverty and gender into health programmes: a sourcebook for health professionals: module on ageing*. Manila: WHO Regional Office for the Western Pacific; 2006.

⁵ Margaret S. and Westaway. The impact of chronic diseases on the health and well-being of South Africans in early and later old age., *Archives of Gerontology and Geriatrics*. 2009; Volume 50, Issue 2, Pages 213-221.

⁶ Reeves, M. J. & Rafferty, A. P. Healthy lifestyle characteristics among adults in the United States, 2000. *Internal Medicine*, 2005; 165(8): 854-57.

⁷ World Health Organisation Prevention of mental disorders in the elderly. Copenhagen: WHO. [on line] . 1977 [cited 2012 Sep 11] Available from: <http://pubs.niaaa.nih.gov/publications/arh27-1/39-51.htm>

⁸ Hicks, T. J. What is your life like now? Loneliness and elderly individuals residing in nursing homes. *Journal of Gerontological Nursing*, 2000. 26: 15-9.

⁹ Lena L. Lim and Ee-Heok Kua. Living Alone, Loneliness, and Psychological Well-Being of Older Persons in Singapore, *Current Gerontology and Geriatrics Research*. 2011; Volume 2011, Article ID 673181, 9 pages doi:10.1155/2011.

¹⁰ Resnick, B. Health promoting practices of older adults: Model testing. *Public Health Nursing*, 2003; 20(1), 2-12.

best, an undesirable state and, at worst, a greater risk of early mortality¹¹. Moreover the cumulative impacts of old age, chronic illness and living alone have not been properly studied, so that little is known about the functional status of community-dwelling, live-alone, elderly persons¹².

Older adults living alone have fewer social connections¹³, and make higher demands on health and social services¹⁴. Many lack an accessible point of contact in case of emergency¹⁵. Emotional support is especially important for older people who face a variety of age-related challenges to their functional abilities and health, but may be absent for many¹⁶. Moreover, although many older people would opt to live independent lives in their own homes for as long as possible when provided with appropriate support, this may not be available¹⁷.

Recent social and demographic changes affecting Thailand mean that the numbers of older people living alone without a caregiver are increasing. Economic development and the growth of manufacturing and service jobs in the cities have led to large-scale migration from agricultural provinces and huge changes in the structure of rural communities. There are fewer people of working age, a breakup of extended families, and a disturbance of traditional patterns of inter-generational caring. The relative under-representation of people of working age, means that fewer careers are available when older people experience health problems. A growing number are left alone, while often being dependent on money sent from children in the city^{18 19}. Rural communities have adopted urban values and ways of life, so that community support for such lone elders may be very limited. Most of the elderly living alone are female and aged more than 70 years²⁰. The proportion of older people living alone

¹¹ Kharicha K, Iliffe S, Harari D, Swift C, Gillmann G, Stuck AE. Health risk appraisal in older people 1: are older people living alone an 'at-risk' group? *British Journal of General Practice*, 2007; 57(537): 271-276.

¹² Diana M. Pierini, D.M. and Volker, D.L. Living Alone In Community and Over 85 Years Old: A Case Study. *Southern Online Journal of Nursing Rresearch*. 2009; 9 (1)

¹³ Resnick, B. Health promoting practices of older adults: Model testing. *Public Health Nursing*, 2003; 20(1), 2-12.

¹⁴ Ryuichi K., Osamu Y., Yuichiro O. and Akihiro K. Influence of living alone on emotional well-being in community-dwelling elderly persons. *Geriatrics and Gerontology International*. 2005; 5: 152–158.

¹⁵ Iliffe, S., Tai, S.S.Haines, A., Gallivan, S., Goldenberg, E., Booroff, A. and Morgan, P. Are elderly people living alone an at risk group? *British Medical Journal* 1992; 305: 1001–1004.

¹⁶ Patrick, J. H., Cottrell, L. E., & Barnes, K. A. Gender, emotional support, and well-being among the rural elderly. *Sex Roles*, 2001; 45, 15-29.

¹⁷ Frances M. Kemp, F.M. and Roy M. Acheson, R.M. Care in the community - elderly people living alone at home. *Community Medicine*. 1989; 11, (1): 21-26.

¹⁸ Sanitwong Na Ayutthaya T. Evaluation of Patterns of Services Provided for the Elderly in the Community: Focusing on Services Rendered by Village Welfare Center, Bangkok: Faculty of Social Sciences and Social Welfare, Huachiew Chalermprakiet University; 1999.

¹⁹ Chunharasmi S. Situation of the Elderly in Thailand 2009, Bangkok: TQP Co.,Ltd.; 2009.

²⁰ Bureau of Health Promotion (2009). Operations Manual for Village Health Volunteers toward the Elderly and Family and Community Relationship, Nonthaburi: Department of Health, Ministry of Public Health.

increased from 3.6% in 1994 to 6.3% in 2002 and 7.7% in 2007²¹. The Northern Region appeared to be the region that had highest percentage of the elderly living by themselves²². Khuha & Thammanwat,²³ found that, in the Northern Region, 31.7% of total elderly living alone were suffered from hypertension, 13.3% from diabetes, 7.0% from cancer, 1.6% from cerebral infarction 2.5% from paralysis/paresis and 0.5% from heart conditions In respect of mental health among the elderly, this study found that 4.8% suffered from depression.

The above suggests the need for future research on the health status of older people living alone with no care-giver. This study seeks to make a contribution by investigating the relationship between lone status, health-related behaviours and the incidence of chronic condition, in older people. If there are significant associations, health care practitioners may be well advised to use lone status as a trigger for further investigation and assessment, so that any unmet need can be addressed.

Materials and Methods

The researchers purposively selected a district in Sukhothai province, a rural area in the lower Northern Region of Thailand, for this study because the North has been identified as the Thai region with the highest proportion of older people living alone. Living alone are those who loss of a partner through death, illness or the end of a relationship. While circumstances rather than active choice led many older people to becoming single, once their partner had died or left, they made a positive choice to live alone rather than to move in with family members. The participants recruited for the research were drawn from all those over the age of 60 who had received treatment in a seven months period at five community “health promotion” hospitals in Kong Krailat district, Sukhothai province. All of population were purposively selected in this study included 572 of over-60s.

The study was approved by the Research Ethics Committee of Naresuan University. The target group of patients for inclusion in the study had presented for treatment at five community health promotion hospitals between January 7 and August 6, 2011. Diagnoses made by community nurse practitioners or physicians were obtained from medical records for use in the study. The criteria for selection for interview were as follows: can communicate in Thai, normal perception of time, place and person, able to hear, understand, and willing to join the study. Of the six hundred and fifty three named patients over the age of 60 identified

²¹ National Statistical Office, Demographic population and housing statistics. . [on line] . 2007. [cited 2012 Mar 20] Available from: <http://web.nso.go.th/survey/keystat/keystat08.pdf>

²² Foundation of Thai Gerontology Research and Development. Situation of the Elderly in Thailand 2007, Bangkok: TQP Co.,Ltd; 2008.

²³ Khuha and Thammawat. Research Program on the Study of Health Care Systems for the Health Vulnerable Elderly in the Community, CG Tool Co.,Ltd, Aging Thai; 2009.

from the records of the five hospitals, five hundred and seventy two met the criteria for inclusion in the study (87.59%).

Data collection

Data were collected from structured, face-to-face interviews. The two authors were assisted by 10 community hospital officers, who received training on carrying out interviews and recording data. The interview schedule included questions on demographic information, including age, gender, level of education, and career, and residential status (living alone or with care-giver). One item specifically asked the participants to indicate the degree to which they engaged in specified health promoting or unhealthy behaviours. This item was based on the Health Promoting Lifestyles Profile II (HPLPII) developed by Walker, Sechrist, and Pender²⁴, and associated with Pender's²⁵ health promotion model. Respondents were asked about tobacco smoking, alcohol use, high fat consumption, fruit and vegetable in the diet, degree of social isolation, ability to manage stressful events, religious activity, access to health information, physical exercise, oral health care and regular physical check-ups. An additional item asked respondents for further information on chronic conditions recorded in their medical records and originally diagnosed by a physician or community nurse. The key measurements were degree of health promoting behaviours and chronic conditions.

Statistical analysis

Descriptive statistical analysis was utilised to calculate percentages, means and standard deviations (SD). Possible associations between the independent variable (living status) and dependent variables (including health behaviours and chronic disease) were examined using binary logistic regression analysis, and the odds ratio (OR), confidence interval (CI), and chi-square values were calculated.

Results

The demographic profile of the older people living alone with chronic disease in this study was as follows. The majority of participants were female (66.85%). The largest age group were 71-75 years of age (31.51%) with roughly equal proportions in the 60-65 years group (18.18%), the 66-70 years group (18.71%) and the 76-80 years group (16.57%). With respect to level of education, most had left school after completing primary education or similar (90.37 %), with the next largest group having had no formal education (5.88%). The majority had either had no formal occupation (69.5%) or worked in agriculture (11.76%) (Table 1).

²⁴ Walker, S., Sechrist, K., & Pender, N. Health-Promoting Lifestyle Profile II. Omaha, NE: Authors. 1995.

²⁵ Pender, N.J. Health Promotion in Nursing Practice. (3rd ed.). Stanford : Appleton & Lange; 1996.

Older people living with caregivers in this study had similar demographic characteristics, though with some differences in reported employment patterns. Again the majority were female (64.16%). The largest group were aged 71-75 years (32.72%) followed by the 66-70 years group (19.22%), the 60-65 years group (18.70%) and the 76-80 years group (16.62%). Most has left school after primary education (93.24%) or had no education (4.41%). A somewhat higher proportion reported having had no formal occupation (75.32%) and a higher proportion has worked in agriculture (14.8%) (Table 1).

With regard to health-related behaviours, those living alone were somewhat more likely to be socially isolated, have high-fat diets, and engage in low levels of regular physical exercise. They also had more involvement in religious activity – usually deemed to be a positive behaviour. However, after controlling for age, sex, education level and employment background, residential status was found to be significantly associated only with excessive alcohol use, and problems in managing stressful life events. Those living alone were 2.73 times more likely to report alcohol use to hazardous levels than those living with a caregiver, and 2.43 times more likely to report problems in managing stressful life events than those living with caregiver. There were no significant differences between the two groups regarding smoking tobacco, fruit and fibre in diet, access to health information, oral health care and regular physical check-ups (Table 2).

Residential status was found to be significantly associated with depression, but not with asthma, high blood pressure, diabetes, coronary heart disease, osteoporosis, stroke, arthritis/rheumatism and cataracts. Odds ratios (OR) for chronic conditions, both crude and adjusted (for controlling age, sex, education level, and career), after analysis in a second multivariate model, showed that only one chronic condition remained significantly more prevalent in those living alone: the likelihood of depression was 4.82 times higher in those living alone (OR =3.96, 95% confidence interval [CI] = 1.1 to 13.4.) (Table 3)

Discussion

This study supports the finding of past studies^{26 27} that substantial numbers of older people with chronic disease live alone with minimal support, but found that the majority of elders with chronic conditions lived with care-givers. A third of the participants ($N = 187$) lived alone and two thirds ($N = 385$) lived with caregivers.

²⁶ Choowattanakorn, T. The social situation in Thailand: the impact on elderly people. International Journal of Nursing Practice, 1999; 5, 95–99.

²⁷ Caffrey, R. A. Caregiving to the elderly in Northeast Thailand. Journal of Cross Cultural Gerontology, 1992; 7, 117–134.

Perhaps surprisingly, the study found no statistically significant association between living alone and the majority of the health-related behaviours examined. Older people living alone were more likely to report unhealthy behaviours, but there were statistically significant associations in only two areas. Those living alone were 2.73 times more likely to use alcohol, and 2.48 times more likely to report difficulties in managing stressful life events than those living with a caregiver.

Nor was there an association between lone status and common chronic diseases, with the exception of depression. What the study highlights is a specific set of problems affecting lone elders concerning alcohol use, poor management of stressful life events and depressive illness – factors which may well interact to lower the quality of life of the people concerned.

While alcohol use may itself be seen as one way of coping with stress, it nevertheless appears to be a behaviour associated with higher risks of morbidity and early mortality in older people. Even at moderate levels of consumption, alcohol use is associated with increased incidence of liver disease, oropharyngeal cancer, esophageal cancer and pancreatitis²⁸. Excessive alcohol intake has been shown to be associated with cardiovascular disease, liver disease, malignant neoplasms and neurological impairment²⁹. Alcohol use has also been reported to speed ageing in older populations³⁰. Furthermore, alcohol is one of the main causes of traffic accidents in Thailand.

The authors can only speculate about the precise reasons why lone elders in this study were more likely to drink alcohol to excess, but loneliness, stress reduction and coping with depression are probably all implicated. This research found a significant association between living alone and stressful life events. This finding needs to be considered alongside the finding that lone elder are 4.82 times more likely than those living with caregivers to have been diagnosed as suffering from depression. There is the possibility both that poor stress management contributes to depression, and that the depressed cope less well with stress.

Depression has become a major mental health problem for older people in Thailand³¹. Several past studies have indicated that living alone and depression are significantly associated^{32 33 34 35}.

²⁸ Rehm, J., Gmel, G., Sempos, C.T., and Trevisan, T. Alcohol-Related Morbidity and Mortality. Bethesda, MD: National Institute on Alcohol Use and Alcoholism (NIAAA). [on line] . 2003 [cited 2012 March 8] Available from: <http://pubs.niaaa.nih.gov/publications/arh27-1/39-51.htm>.

²⁹ *ibid*

³⁰ Stevenson J S. Alcohol use, misuse, abuse, and dependence in later adulthood. *Annu Rev Nurs Res* 2005; 23: 245–80.

³¹ Haseen F and Prasartkul P. Predictors of depression among older people living in rural areas of Thailand. *Bangladesh Med Res Counc Bull.* 2011; Aug;37(2):51-6.

Recent demographic trends and work patterns may be contributing to a situation where older Thai people find themselves isolated after a lifetime in a culture that stresses the value of the extended family and family support. With the migration of people of working age to the cities, many Thai elders find themselves in communities with disproportionate numbers of older people and young children, and a shortage of fit adult carers. Jongudomkarn and Camfield³⁶ found that many older people fear being left without economic support when times get tough. Thus there is probably a valid reason for them to feel depressed, particularly when they live alone with chronic disease and the lack of a caregiver. Feelings of abandonment appear to result in lower quality of life in terms of psychological factors, including overall enjoyment of life, having a meaningful life, and feelings of despair, anxiety and depression³⁷. Thus this group may be locked into a downward cycle where stress and excessive alcohol use fuels depression, and where depressive illness adds to the inability to cope with stress or stop drinking.

The situation will be exacerbated for lone elders with additional chronic conditions, which while no more likely to affect them than elders living with carers, may have greater impact where social support is absent. High-blood pressure, arthritis/rheumatism, cataracts and diabetes were four common conditions affecting quite large numbers of both lone and supported older people in this study.

The limitations of the research should be acknowledged: it included only older people who could communicate in Thai, had normal perceptions of time, place and person, were able to hear and understand, and were willing to join the study. Therefore, the study may have under-represented those with severe mental illness or hearing difficulties, as well as more severely ill individuals registered with larger district hospitals, as opposed to the community health promotion hospitals utilised to recruit the sample.. Moreover, face-to-face interviewing, while probably raising the response rate and allowing validation of answers

³² Adams, K. B. Loneliness and depression in independent living retirement communities: risk and resilience factors. *Aging & Mental Health*, 2004; 8(6), 475–485.

³³ Thisted, C. Loneliness as a specific risk factor for depressive symptoms: cross-sectional and longitudinal analyses, *Psychology and Aging*, 2006; 21(1), 140–151.

³⁴ Tong , H.M. Lai, D.W.L., Zeng, Q., and Xu, W.Y. Effects of social exclusion on depressive symptoms: Elderly Chinese living alone in Shanghai, China, *J Cross Cult Gerontol*. 2011; 26(4): 349-64. DOI 10.1007/s10823-011-9150-1.

³⁵ Lena L. Lim and Ee-Heok Kua. Living Alone, Loneliness, and Psychological Well-Being of Older Persons in Singapore, *Current Gerontology and Geriatrics Research*. 2011; Volume 2011, Article ID 673181, 9 pages doi:10.1155/2011.

³⁶ Jongudomkarn, D., & Camfield, L. Exploring the quality of life of people in North Eastern and Southern Thailand. *Social Indicators Research*, 2006; 78, 489–529.

³⁷ Sudnongbua S, La Grow, S. & Boddy, J. Feelings of Abandonment and Quality of Life Among Older Persons in Rural Northeast Thailand *J Cross Cult Gerontol*.2011; 25:257– 269. DOI 10.1007/s10823-010-9126-6.

from semi-literate respondents, may have influenced responses by encouraging patients to answer in expected ways.

Conclusion

Poor stress management, alcohol use and depressive illness were all manifest among older people living alone. Given the results of this study, we suggest that service providers should develop targeted interventions to address this specific complex of interacting problems. These need to be designed to take account of older people's social contexts and lifestyles, and particularly to help elders to manage stress, alcohol use and depression, while living in rural villages affected by changing social structures and employment patterns.

In terms of policy and practice the paper highlighted the importance of promoting healthy behaviors in the older people living alone. These include stress management, healthy eating, regular exercise, none excessive alcohol and tobacco use. These would reduce the risk of chronic health problems, such as hypertension, heart diseases ,diabetes, mellitus, cancer , and stroke. The government and health service providers should develop a health promotion strategies which facilitate and improve access for older people living alone to health services. Also the local community should promote the health care in order to help older people living alone at home which has a lower cost than care in hospital.

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Table 1. Demographic Characteristics.

Demographic data	Living alone N =187		Living with caregivers N=385	
	Number	percent	Number	percent
Gender				
Male	62	33.16	138	35.84
Female	125	66.84	247	64.16
Age (years)				
60-65	34	18.18	72	18.70
66-70	35	18.71	74	19.22
71-75	59	31.51	126	32.72
76-80	31	16.57	64	16.62
>80	28	14.97	49	12.72
Educational Background				
No education	11	5.88	17	4.41
Primary school	169	90.37	359	93.24
Secondary-High school	2	1.06	5	1.29
Bachelor or higher	5	2.67	4	1.03
Employment				
No formal employment	130	69.5	270	70.10
General Employee	21	11.22	31	8.05
Vendors	14	7.48	27	7.01
Agriculture	22	11.76	57	14.80

Table 2. Health Behaviors by Living Status and Unadjusted and Adjusted Odds Ratios of Health Behaviors Among Lone Elders.

Health Promoting/Unhealthy Behaviors	Living alone n (%) (total n = 187)	Living with caregiver n (%) (total n = 385)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Smoke tobacco	35/187 (18.7)	63/385 (16.3)	1.17 (0.7 to 1.8)	0.96 (0.5 to 1.7)
Excessive alcohol use	28/187 (14.9)	27/385 (7.0)	22.23 (12 to 3.9)	2.73 (1.3 to 5.5)*
High fruit and fibre in diet	56/187 (29.9)	114/385 (29.6)	1.01 (0.6 to 1.4)	1.25 (0.8 to 1.9)
High fat consumption	27/187 (14.4)	87/385 (22.0)	0.59 (0.3 to 0.9)*	0.70 (0.4 to 1.1)
Socially isolated	36/187 (23.6)	66/385 (20.6)	1.11 (0.7 to 1.7)	1.33 (0.8 to 2.1)
Poor stress management	30/187 (16.0)	19/385 (4.9)	3.68 (2.0 to 6.7)**	2.48 (1.2 to 4.9)*
Religious activity	74/187 (39.5)	117/385 (30.3)	1.50 (1.0 to 2.1)*	1.44 (0.9 to 2.1)
Low regular physical exercise	93/187 (49.7)	166/385 (43.1)	1.30 (0.9 to 1.8)	1.16 (0.7 to 1.7)
Low access to health information	53/187 (28.3)	171/385 (44.4)	0.49 (0.3 to 0.7)**	0.79 (0.5 to 1.2)
Oral health care	75/187(40.1)	183/385 (47.53)	0.73 (0.5 to 1.0)	0.77 (0.5 to 1.1)
Regular physical check ups	93/187 (49.7)	166/385 (43.1)	1.30 (0.9 to 1.8)	1.16 (0.7 to 1.7)

*Adjusted for age, sex, education level, and employment. *P<0.05. **P<0.005. OR = odds ratio.*

Table 3. Chronic Conditions by Living Status and Unadjusted and Adjusted Odds Ratios of Chronic Conditions Among Lone Elders.

Chronic conditions	Living alone n (%) (total n = 187)	Living with caregiver n (%) (total n = 385)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
High Blood pressure	89/187 (47.5)	160/385 (41.5)	1.40 (0.9 to 2.1)	1.37 (0.8 to 2.1)
Diabetes	21/187 (11.2)	37/385 (9.6)	1.19 (0.6 to 2.0)	1.24 (0.6 to 2.2)
Coronary heart disease	5/187 (2.6)	20/385 (5.1)	0.50 (0.1 to 1.3)	0.54 (0.1 to 1.5)
Depression	37/187 (19.7)	19/385 (4.9)	4.75 (2.6 to 8.5)**	4.82 (2.5 to 9.2)**
Asthma	5/187 (2.7)	21/385 (5.76)	0.47 (0.1 to 1.2)	0.54 (0.1 to 1.5)
Osteoporosis	6/187 (3.2)	7/385 (1.8)	1.79 (0.5 to 5.4)	1.87 (0.6 to 5.7)
Stoke	1/187 (0.5)	11/385 (2.8)	0.18 (0.0 to 1.4)	0.19 (0.0 to 1.5)
Arthritis/rheumatism	85/187 (45.4)	137/385 (35.5)	1.50 (1.0 to 2.1)*	1.32 (0.8 to 2.0)
Cataracts	36/187 (23.6)	66/385 (20.6)	1.11 (0.7 to 1.7)	1.33 (0.8 to 2.1)

*Adjusted for age, sex, education level, and employment. *P<0.05. **P<0.005. OR = odds ratio.*